

REMARKS

Reconsideration and allowance of this application are respectfully requested. Currently, claims 1, 3, 5, 7, 11, 13, 17, 19, 23, 25, 27, 29, 31, 33, 35, 37, 39, 43, 45, 47, 49-51, 53, 59, 61, 67, 69 and 75-98 are pending in this application.

Rejections Under 35 U.S.C. §102 and §103:

Claims 1, 3, 5, 7, 11, 13, 17, 19, 23, 25, 27, 35, 37, 39, 43, 45, 47, 49-51, 53, 59, 61, 75-85, 89-92 and 94-97 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by, or in the alternative under 35 U.S.C. §103 as being obvious over Suzuki et al. (U.S. '940, hereinafter "Suzuki").¹ Applicant respectfully traverses this rejection.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1574 (Fed. Cir. 1986). In order to establish a *prima facie* case of obviousness, all of the claim limitations must be taught or suggested by the prior art. Suzuki fails to disclose, teach or suggest every claim element of the claimed invention. For example, Suzuki fails to disclose, teach or suggest "sets a limiting current region within a voltage level range between a first voltage point, at which an electromotive force of said sensor element changing with an increase of the applied voltage starts to come into a balance with said applied voltage, and a second voltage point, at which a decomposition of water contained in the detection gas starts, for each of levels of the specific component concentration, the voltage level range of the limiting current region for each level of the specific component concentration being changeable with a temperature of the sensor element due to a sensor output characteristic

¹ Applicant notes that the named inventors of the Suzuki reference (U.S. '940) are also named among the inventors in the present application. Applicant further notes that assignee of the Suzuki reference is the same as that of the present application.

changing with the temperature of the sensor element,” as required by independent claim 1 and its dependents. Similar comments apply to the remaining independent claims. Accordingly, Applicant requests that the various rejections noted above under 35 U.S.C. §102 and §103 be withdrawn.

Through at least the above noted features of claim 1, the applied voltage control unit sets a limiting current region within a voltage level range between a first voltage point and a second voltage point. At the first voltage point, an electromotive force of a sensor element changing with an increase of the applied voltage starts to come into a balance with an applied voltage. At the second voltage point, a decomposition of water contained in the detection gas starts. The applied voltage control unit adjusts the applied voltage line such that the applied voltage line passes through the limiting current region set for each level of a specific component concentration within a gas concentration detection range.

As noted above, the second voltage point set by the applied voltage control unit is that voltage point at which a decomposition of water contained in the detection gas starts. Accordingly, the element current can be detected in a voltage region in which water is not decomposed, so that the applied voltage can be reliably controlled in the current limiting region. The precision of the detection of the element current can thus be improved.

In contrast, Suzuki fails to teach or suggest identifying a division between a voltage region in which water is decomposed and another voltage region in which water is not decomposed. Suzuki therefore clearly fails to disclose a limiting current region (i.e., one of the “flat” regions in which an element current flows through a sensor element at a constant rate as disclosed in, for example, Figs. 3 and 5 of the present application) having a second end point at

which a decomposition of water contained in the detection gas starts (i.e., water is not decomposed in the limiting current region).

More specifically, the V-I characteristics of an A/F sensor shown in Fig. 3 of Suzuki are determined when the sensor is put into a model gas on the condition that water contained in the model gas is not decomposed or that the model gas does not contain water. Accordingly, Suzuki's characteristic of the applied voltage is determined without considering the decomposition of water. In contrast, claim 1 requires that the limiting current region through which the applied voltage line passes is determined while considering the decomposition of water contained in the detection gas. In particular, the limiting current region through which the applied voltage line passes utilizes as one of its end points the voltage point at which the decomposition of water contained in the detection gas starts. The element current in claim 1 can thus be detected in a voltage region where water is not decomposed. The applied voltage can therefore be reliably controlled in the current limiting region and detection precision of the element current can be improved.

If the rejection over Suzuki is maintained, Applicant respectfully requests that the next Office Action identify where (i.e., what column and line number(s) and/or what figure(s)) Suzuki discloses an applied voltage control unit setting a limiting current region within a voltage level range between a first voltage point and a second voltage point at which a decomposition of water contained in the detection gas starts. In this regard, it does not appear that Suzuki ever recites the word "water."

As discussed above, Suzuki fails to teach or suggest a limiting current region within a voltage level range having a second voltage end point at which a decomposition of water contained in the detection gas starts. Moreover, Suzuki further fails to teach or suggest the

limiting current region having the claimed first voltage end point. That is, the applied voltage unit of claim 1 sets a limiting current region within a voltage level range between a first voltage point and a second voltage point, the first voltage point being the point at which an electromotive force of a sensor element changing with an increase of the applied voltage starts to come into a balance with an applied voltage. Suzuki fails to teach or suggest this first claimed voltage point of the limiting current region at which an electromotive force of the sensor changing within an increase in the applied voltage starts to come into a balance with the applied voltage. If the next Office Action maintains the rejection of Suzuki, Applicant respectfully requests that the next Office Action specifically identify where in Suzuki (i.e., what column and line number(s) and/or what figure(s)) disclose the claimed first voltage point of the limiting current region.

Claims 1, 3, 5, 7, 11, 13, 17, 19, 23, 25, 27, 35, 37, 39, 43, 45, 47, 49-51, 53, 59, 61, 75-85, 89-92 and 94-97 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Suzuki in view of JP '388. Claims 29, 31, 33 and 86-88 were rejected under 35 U.S.C. §103 over the three-way combination of Suzuki in view of JP '388 and in further view of Okazaki et al. (U.S. '641, hereinafter "Okazaki"). Claims 67, 69, 93 and 98 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over the three-way combination of Suzuki in view of JP '388 in further view of Suzuki et al. (U.S. '773, hereinafter "Suzuki '773"). None of the secondary or tertiary references resolve the above-described deficiencies of Suzuki with respect to "sets a limiting current region within a voltage level range between a first voltage point, at which an electromotive force of said sensor element changing with an increase of the applied voltage starts to come into a balance with said applied voltage, and a second voltage point, at which a decomposition of water contained in the detection gas starts, for each of levels of the specific component concentration, the voltage level range of the limiting current region for each

level of the specific component concentration being changeable with a temperature of the sensor element due to a sensor output characteristic changing with the temperature of the sensor element," as required by independent claim 1 and its dependents. Similar comments apply to the remaining independent claims. Applicant thus requests withdrawal of the above-noted rejections under 35 U.S.C. §103.

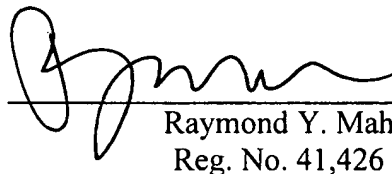
Conclusion:

Applicant believes that this entire application is in condition for allowance and respectfully requests a notice to this effect. If the Examiner has any questions or believes that an interview would further prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:

A handwritten signature in dark ink, appearing to be 'Raymond Y. Mah', written over a horizontal line.

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